

# PATENT SPECIFICATION



Application Date: April 24, 1936. No. 11747/36.

473,989

Complete Specification Left: April 26, 1937.

Complete Specification Accepted: Oct. 25, 1937.

## PROVISIONAL SPECIFICATION

### Improvements in or relating to Means for Heating the Interiors of Buildings

We, GEORGE WILLIAM WRENTMORE, a British Subject and GLOUCESTER INCUBATORS LIMITED, a British Company, both of Woodchester Works, Stroud, Gloucestershire, do hereby declare the nature of this invention to be as follows:—

This invention relates to hot water radiators for heating interiors of buildings and to the kind in which each radiator is provided with its own heating element the object of the invention being to provide an improved form of radiator in which the construction and arrangement are such that it can be readily given the appearance of an ordinary fire-place.

According to the invention a hot water radiator is provided comprising a heating element or elements, water circulating means heated by said elements and a heat radiating element or elements which are so arranged in relation to the heating and water circulating means that the said heat radiating element or elements can be shaping and ornamentation be made to impart to the whole radiator the appearance of a fireplace.

In carrying the invention into effect and in the preferred manner the improved hot water radiator comprises one or more chimneys or boilers disposed towards the rear of the apparatus and communicating with a number of water circulating tubes passages or chambers. These heating and water circulating components are all mounted between a lagged rear wall and a front heating radiating element or elements which may and preferably does take the form of a metal housing which encloses said water circulating elements and heating elements, a space or spaces being formed between the water circulating elements and the lagged rear wall to allow for the circulation of air which enters and leaves the radiator through openings at the upper and lower edges of the heat radiating element. When this element takes the form of a housing its upper and lower surfaces are perforated to permit the air circulation to take place.

At the base of the chimney or boiler is situated the heating means, for example, a burner or burners, preferably of the blue

flame wick type, which is, or are, to allow of necessary attention to the burner or burners slidably mounted upon the top of a liquid fuel reservoir. Each burner is preferably provided with a sleeve extension inserted in a screw-threaded base, which engages a screw-threaded socket in the reservoir, and the screw-threaded base is provided with one or more handles so that it can be rotated to raise or lower the burner into and out of engagement with the lower end of the chimney or boiler.

With the arrangement herein described the unit assembly can be made in a form to resemble a fireplace, the lower portion may be, if desired, shaped, or as a detachable or hinged cover to the burner reservoir, forming a hearth.

The fireplace appearance may be formed by constructing the heat radiating element as a removable decorated metal sheet, in front of which may be placed a lighting element or elements suitably screened with translucent material coloured to give the appearance of a glowing fire. Instead of a lighting element, however, a heat radiating element may be employed, such as a blue flame burner or burners each having a radiating mantle. In front of such mantle or mantles a small reflector preferably brightly coloured, could be placed to face the larger sheet metal screen so that the reflections caused would resemble a glowing fire with the advantage of the heat radiated from the mantle or mantles.

Any exposed surfaces may be decorated by painting or other means, to give the appearance of tiles or other materials used in the construction of ordinary fireplaces.

The burners used in the fireplace opening can be mounted on the same reservoir as the chimney burner, but under separate control.

In this construction, suitable arrangements are provided for inspecting the burners and for replenishing the water supply in the heating system.

It is understood that instead of using liquid fuel, the arrangement herein described may be heated by gas or electricity.

[Price 1/-]

The construction above described allows the radiator to be made in a readily transportable form which can be positioned at any desired part of a room.

Dated this 24th day of April, 1936.  
FRANCIS HERON ROGERS,  
Agent for Applicants,  
Bridge House,  
181, Queen Victoria Street,  
London, E.C.4.

## COMPLETE SPECIFICATION

### Improvements in or relating to Means for Heating the Interiors of Buildings

5 We, GEORGE WILLIAM WRENTMORE, a British subject and GLOUCESTER INCUBATORS LIMITED, a British Company, both of Woodchester Works, Stroud, Gloucestershire, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 This invention relates to hot water radiators for heating interiors of buildings and to the kind in which each radiator is provided with its own heating element, the object of the invention being to provide an improved form of radiator in which the construction and arrangement are such that it can be readily given the appearance of an ordinary fireplace.

15 According to the invention a hot water radiator is provided wherein a number of water heating and circulating elements are arranged in front of and spaced from a backing or support to form an air passage extending from the base towards the top of the radiator for the purpose of enabling the heating to be effected by flow of air up the said passage and of thereby permitting the front portion of the radiator to be given the appearance of an ordinary fireplace.

20 According to a further feature of the invention a casing is provided forming a frame surrounding said heating elements and means are provided for allowing the air to be heated, to enter the radiator at the base and to pass upwards between the heating elements and the insulated backing and for causing the heated air to leave in a substantially horizontal direction at the top of the radiator.

25 Reference will now be made to the accompanying drawings which illustrate by way of example a construction according to the invention in which:

30 Fig. 1 is a rear elevation partly in section,

Fig. 2 is a sectional plan taken on the line 2—2 of Fig. 1,

Fig. 3 is an end elevation also partly in section,

55 Fig. 4 is a part sectional elevation of a

modified arrangement and,

Fig. 5 is a part sectional plan view of Fig. 4.

In the construction illustrated in Figs. 1 to 3 the hot water radiator comprises a base plate 1, vertical side walls 2 and a hinged cover or top 3.

The apparatus is heated by means of a blue flame oil burner 4 mounted on a reservoir 5 which can be removed from the apparatus by sliding it across the base plate 1.

From the base plate extend vertical supports 6 provided with brackets 7 for supporting the heat radiating element comprising a number of radiating tubes 8 connected at their upper and lower ends by headers 9.

Disposed centrally within the apparatus is a chimney or flue 10 whose lower end engages the top of the oil burner 4 and which is surrounded by a water jacket 11 provided with a number of water circulating tubes 12 extending vertically within the chimney 10 and having direct communication with the upper and lower headers 9 so that water after being heated in the tubes 12 can circulate through the headers 9 and into the radiating elements 8.

These heat and water circulating components are all mounted in front of and spaced from a heat insulated rear wall 13 to form a space for the circulation of air which enters by means of holes 14 in the base and passes upwards through the narrow space 14a between the radiating tubes 8 and the insulated rear wall 13 and leaves the radiator through an opening 15 formed in the casing above the heat radiating elements or tubes 12. The flat top or cover 3 of the radiator deflects this heated air into a horizontal direction and assists in circulating it to the interior of the room.

A water container 16 is disposed above the heat radiating elements 8 and water can pass through pipes 17 into the upper header and so round the circulating system.

On the upper surface of the container are two outlets 18 which are completely

closed by caps 19 which fit closely into the outlets 18. These caps are provided with slots 20 so that when the caps are lifted to a certain extent the interior of the water container is placed in communication with the atmosphere to allow water vapour to escape from the interior of the water container for humidifying purposes, and by varying the height of the slots 20 away from the outlets 18 a variable degree of humidification can be obtained.

The chimney 10 extends vertically upward through the water container 16 and terminates in the flat top or lid 3 which is provided with a vent 32 to allow the gases of combustion to escape.

Two water supply reservoirs 21 and 22 are provided, one at each end of the water container 16 and are connected thereto by pipes 23. Each reservoir is housed in a trough 24 and comprises a cylindrical casing 25 having mounted within it a spring loaded valve 26 adapted to be lifted off its seating by a spindle 28 when the reservoir is placed in the inverted position as shown in Fig. 1. The reservoirs are filled with water whilst in an upright position and are then placed in the troughs 24 in an inverted position, the valves 26 being lifted off their seatings 27 thus allowing the water to flow into the container 16 through the hole 29 in the cylindrical casing 25.

In the modified arrangement shown in Figs. 4 and 5 heat radiating elements 33 and 34 are disposed at each side of a chimney or flue 10, the said radiating elements being connected at their upper and lower ends by tubes 36 and 37 which pass through the chimney 10. The water in the radiating elements is heated by the hot gases from the burner 4 passing up the chimney 10 and circulating round the tubes 36 and 37. A plate 38 is provided at the front of the chimney 10 to prevent the air during its upward journey through the passage 14a from escaping between the radiating elements and the chimney before it is deflected into the atmosphere by the flat top or cover 3.

To facilitate removal of the burner 4 and reservoir 5 for cleaning purposes the burner is preferably mounted on a coil spring 30 so that it can be raised or lowered into or out of engagement with the lower end of the chimney or flue 10.

Alternatively the burner may be provided with a sleeve extension inserted in a screw-threaded base, which engages a screw-threaded socket in the reservoir 5 and the screw-threaded base is provided with one or more handles so that it can be rotated to raise or lower the burner.

With either arrangement herein de-

scribed the unit assembly can be made in a form to resemble a fireplace, the lower portion 31 may be decorated if desired to give the appearance of a glowing fire. Alternatively the fireplace appearance may be formed by constructing the front of the radiator as a removable decorated metal sheet, in front of which may be placed a lighting element or elements suitably screened with translucent material coloured to give the appearance of a glowing fire. Instead of a lighting element, however, a heat radiating element may be employed such as a blue flame burner or burners each having a radiating mantle. In front of such mantle or mantles a small reflector preferably brightly coloured, could be placed to face the larger sheet metal screen so that the reflections caused would resemble a glowing fire with the advantage of the heat radiated from the mantle or mantles.

Any exposed surfaces may be decorated by painting or other means to give the appearance of tiles or other materials used in the construction of ordinary fireplaces.

It is to be understood that instead of using a single burner as above described, a number of such burners may be employed to enable the heat radiating surface to be increased. Also instead of using liquid fuel the burner 4 and reservoir 5 may be replaced by a gas burning or electrical heating unit arranged so that combustion gases or heated air ascend the chimney 10 as before.

The constructions above described allow the radiator to be made in a readily transportable form which can be positioned at any desired part of a room.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A hot water radiator wherein a number of water heating and circulating elements are arranged in front of and spaced from a backing or support to form an air passage extending from the base towards the top of the radiator for the purpose of enabling the heating to be effected by flow of air up the said passage and of thereby permitting the front portion of the radiator to be given the appearance of an ordinary fireplace.

2. A hot water radiator according to Claim 1 including a casing forming a frame surrounding said heating elements and means for allowing air to be heated to enter the radiator at the base to pass upwards between the heating elements and an insulated backing and for causing the heated air to leave in a substantially horizontal direction at the top of the radiator.

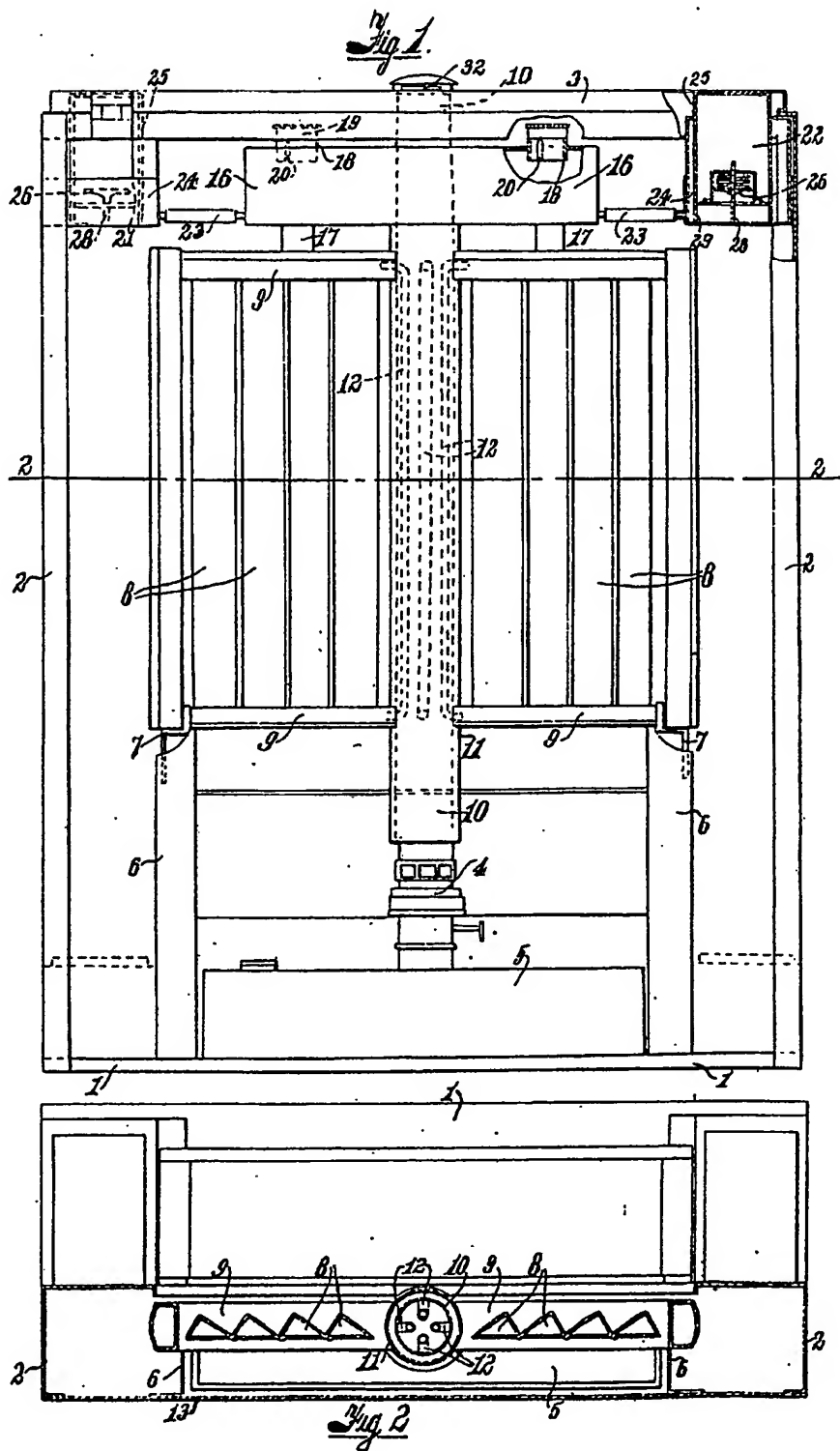
3. A hot water radiator according to Claim 2 including a plurality of water tubes constituting heating elements extending between upper and lower headers arranged at each side of a chimney situated above a burner mounted removably and/or adjustably in the base of the radiator.
4. A hot water radiator comprising a central flue or chimney extending between upper and lower water headers, a plurality of heat radiating elements disposed at each side of said chimney, a burner or other heating element disposed at the base of said chimney, the whole surrounded by a casing so arranged as to provide a passage for air to be heated between its rear wall and the heat radiating elements.
5. A hot water radiator according to Claim 1, 2 or 3 wherein a heat radiating water container is disposed at each side of a central chimney through which pass water tubes connecting the said containers which are spaced apart from the rear wall of a casing to form the air heating passages.
6. A hot water radiator constructed, arranged and adapted to operate as a whole substantially as described with reference to Figs. 1 to 3 or 4 and 5 of the accompanying drawings.

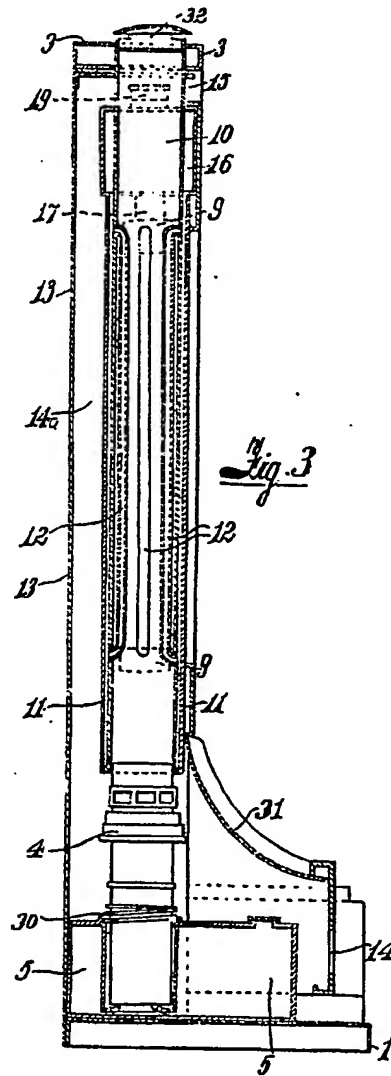
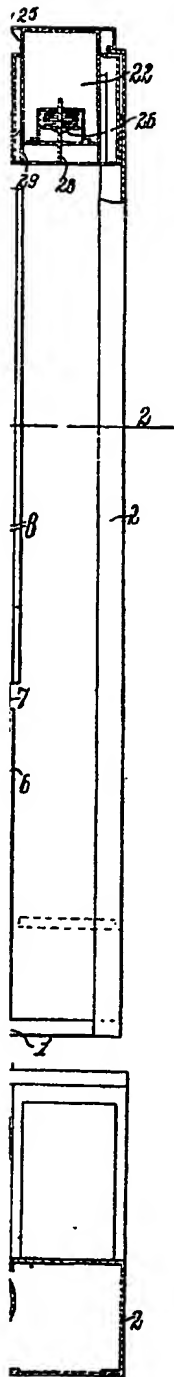
Dated this 26th day of April, 1937.

FRANCIS HERON ROGERS,  
Agent for Applicants,  
Bridge House,  
181, Queen Victoria Street,  
London, E.C.4.

Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1937.

[This Drawing is a reproduction of the Original on a reduced scale.]





473989 COMPLETE SPECIFICATION

3 SHEETS  
SHEET 2

SHEET 1

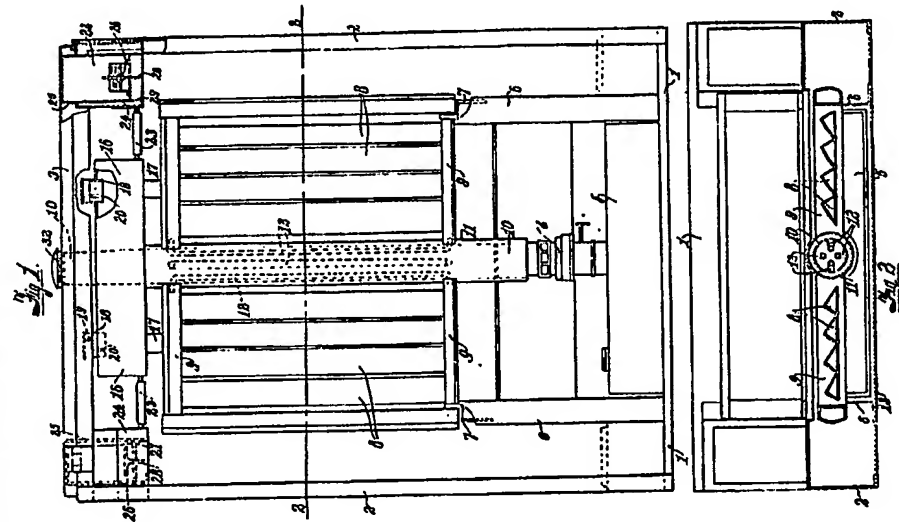


Fig. 1

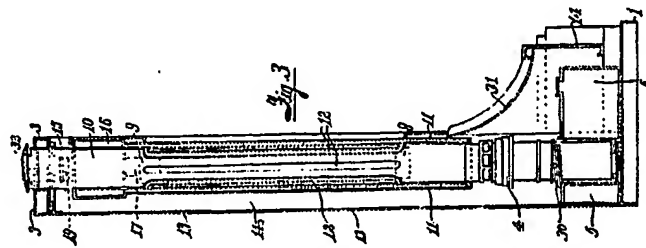
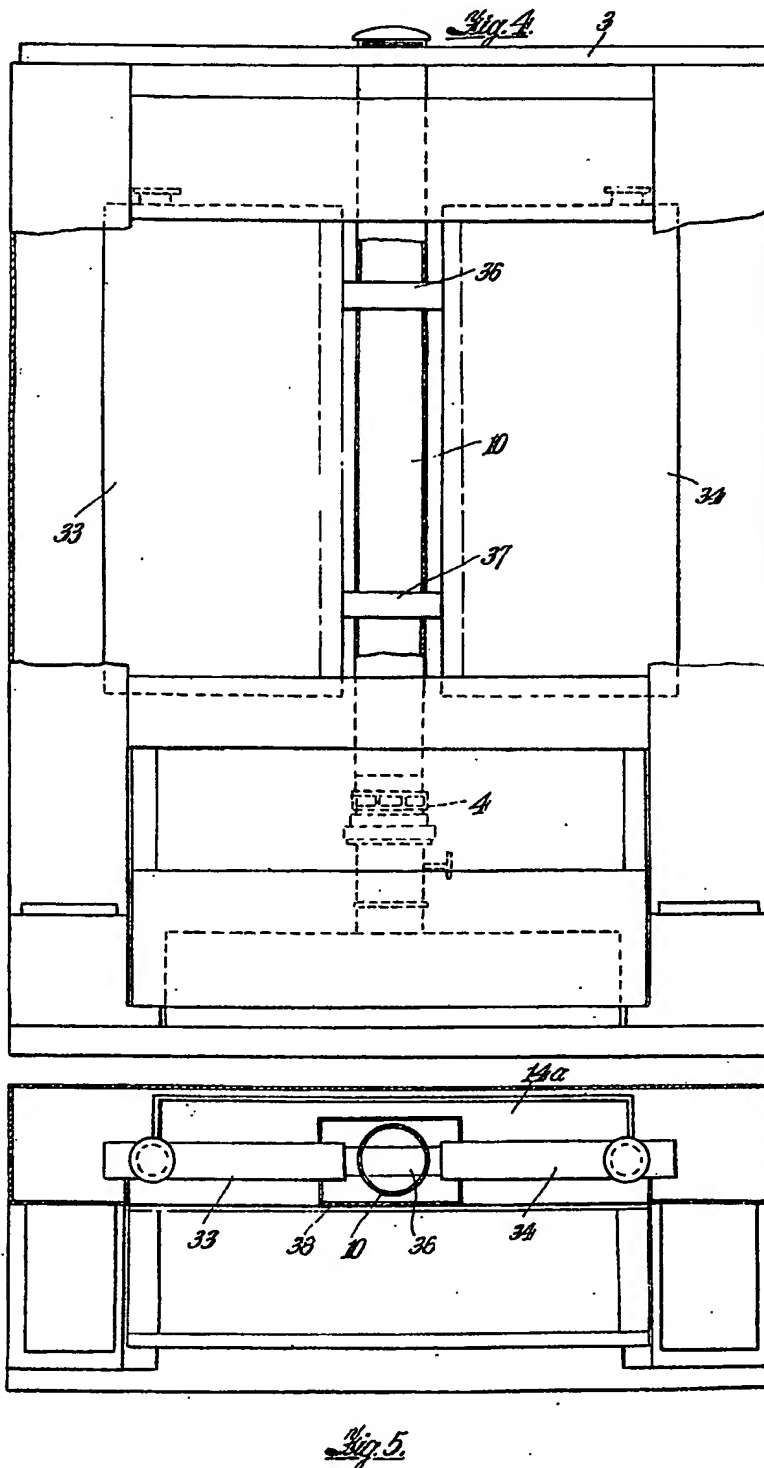


Fig. 3

[This Drawing is a reproduction of the Original on a reduced scale]

MAKING & SELLING

[This Drawing is a reproduction of the Original on a reduced scale.]



Melby & Sons, Photo-Lith.